REMARKS

This Amendment is being submitted to address the points raised in the Office Action of May 9, 2001, and is believed fully responsive to each point of rejection raised therein. Accordingly, favorable reconsideration is respectfully requested.

Specification

The Examiner has objected to the specification because of minor grammatical errors and has specifically stated that on page 17, lines 5 and 6 the phrase dealing with a flat portion of the water tank is unclear. Applicant did not amend this particular section and points out to the Examiner that this description is clear and does not require any particular flat portion, rather it refers to any flat portion which is being tested by the claimed apparatus. Applicants respectfully request that the Examiner reconsider and withdraw this objection.

Claim Objections

Claims 24-25, 29, and 30 stand objected to because they are in improper multiple dependent form. Applicant has amended these claims and added claims 34-45 in order to provide the same scope of coverage.

Information Disclosure Statement

The Examiner indicates that an Information Disclosure Statement and PTO 1449 filed by the Applicant has been lost by the Patent Office. However, it is Applicants understanding that no such Information Disclosure was ever filed, therefore Applicant believes that statement is erroneously included in the Office Action.

Claim Rejections - § 112, First Paragraph

The Examiner has rejected claims 16 and 17 under § 12, first paragraph, as allegedly not being enabled. In particular, the Examiner states that the word "exciting" is not described in the specification and also that the collecting phrases are not described in the specification.

Regarding the collecting phrases, Applicant has amended these phrases in claims 16 and 17 to clarify and overcome the rejection. Regarding the phrase "exciting", Applicant points out that the specification makes it clear that the term "exciting" simply means activating the probe so that the probe transmits an ultrasonic pulse. For example, page 2, lines 1-5 of the specification explains that the transmission/reception circuit "excites" a piezoelectric vibrator in the probe by a high pressure impulse signal for generating ultrasonics. Applicant traverses the rejection and asks that the Examiner withdraw it.

§ 112, Second Paragraph Rejection

The Examiner has also rejected claims 14, 16-20, 28 and 32 as being allegedly indefinite. In response, Applicant has amended claims 14, 16 and 17 as shown in the attached Appendix. Also, the terms "exciting" and "excitation means" are not indefinite and are clearly explained in the specification as described above.

§ 102 Rejection

The Examiner has rejected claims 1-3, 8, and 14 under § 102(b) as being allegedly anticipated over Weiss. The invention of claim 1 is directed to an ultrasonic inspection

management system having multiple probes 1 and associated main system bodies 100. The main system bodies are connected to a host computer C which is connected to a data storage section M.

Weiss is directed to an ultrasonic tire testing apparatus which has multiple receiver transmitters 154/155, each connected through circuitry 156, 158, 160, and 162 to a multiplexer 164. The multiplexer connects the individual circuits to an A/D converter 174 which then communicates with microprocessor 176. The system further includes a display 178 located at the microprocessor.

The Examiner admits that Weiss does not mention a body, but states that that element is inherent so that the body would protect components against dust.

Applicant disagrees with the Examiner that such a main body is inherent. However, to further distinguish claim 1 from the Weiss system, Applicant has amended claim 1 as set forth in the attached Appendix, to require "multiple ultrasonic inspection systems each consisting of a probe and a system main body." Applicant believes this amendment further distinguishes over Weiss in that Weiss does not disclose multiple separate main bodies (i.e., one for each probe). Rather Weiss shows multiple electronic circuits bundled together in a single receiver module. See, .e.g., column 9, lines 55-57 ("referring to Fig. 10, there is showing block diagram of the electronic devices used in implementing ***the receiver module***.") Thus, Weiss does not inherently disclose a system main body for each probe as it instead discloses a single receiver module which conducts all of the signal transmission and reception functions for all of the different

probes. Applicant also submits that Weiss does not suggest this feature as it teaches expressly to combine the circuitry for each probe in a single receiver module.

With regard to dependent claims 2, 3, 8 and 14, Applicant submits that these claims are patentable over Weiss at least for the reasons set forth regarding claim 1.

§ 103 Rejection

With regard to claims 4, 5, 6, 7, and 18, the Examiner admits that Weiss does not teach a switch which disconnects or connects a probe to and from the main body, as well as performing separate tests with the probe attached to the main body and with the probe not attached to the main body. The Examiner takes official notice for these claim elements and alleges that it would be obvious to modify Weiss in the direction of these claims. Applicant traverses this assertion.

If an Examiner has relied on "common knowledge" or "well known" prior art and "the Applicant traverses such an assertion, the Examiner should cite a reference in support of his or her position." (MPEP § 2144.03, second paragraph). Applicant therefore requests that the Examiner cite a reference which contains express teachings of these missing claimed features; if the Examiner cannot find such express teachings, then Applicant submits that the rejections must be withdrawn.

With regard to claims 9, 10, 12, and 13, the Examiner admits that Weiss does not teach comparing a rate of data change to a threshold value, and cites Ishihara as allegedly teaching this feature. The Examiner then states that it would be obvious to modify Weiss in the direction of

the claimed invention, "because doing so would give a person the idea of the rate the tires are separating from the tire."

Applicants submit that assuming *arguendo* that Ishihara teaches the claimed feature of these claims, the Examiner's purported motivation for combining the two references is improper. There is no suggestion anywhere in the Weiss reference that information such as the rate that the tires are separating is in anyway valueable to Weiss. In fact, Weiss expressly teaches monitoring the tire only for one revolution so as to monitor the entire surface of the tire once. Weiss has no need for any such modification as alleged by the Examiner and expressly teaches away from such modification. Applicant therefore submits that claims 9, 10, 12 and 13 are further patentable over the cited combination.

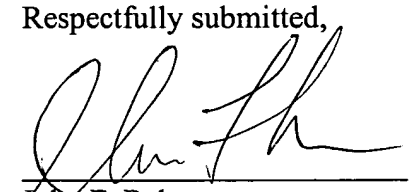
With further regard to claims 20 and 33, the Examiner admits that Weiss does not teach a display section in each of the individual inspection systems, but alleges that such a modification would be obvious because Weiss teaches a display at the main microprocessor. Applicant disagrees with the Examiner's assertion because Weiss teaches expressly to put all of the sensors in approximately the same location so that the circuitry for each sensor is located in a single receiver module. Therefore Weiss has no need for putting a display associated with each circuit for each sensor. Moreover, by expressly teaching that the display is connected to the microprocessor and located in that vicinity, Weiss teaches away from any need to have an individual display associated with each main body or probe. Thus Applicant submits that claims 20 and 33 are further patentable over Weiss.

With regard to the remaining claims, Applicant submits that they are patentable at least for the reasons set forth regarding amended claim 1.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Applicant hereby petitions for any extension of time which may be required to maintain the pendency of this case, and any required fee, except for the Issue Fee, for such extension is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,



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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The specification is changed as follows:

Page 1, first full paragraph:

This invention relates to [a] an ultrasonic inspection system management system for storing various data pieces provided by each ultrasonic inspection system or performing required processing based on the data pieces.

Page 1, second full paragraph:

Non-descriptive inspection systems using ultrasonics (ultrasonic inspection systems) are used in various fields of inspection of steel, metal, etc., [to] and inspection of semiconductors in recent years. They are used in various departments as field inline inspection tools [to] and research and development tools. They have various shapes [of] such as handy [type] types that are portable by the inspector [to] and installation [type] types that are installed in the field. A representative system configuration is shown in FIG. 1.

Page 1, third full paragraph bridging pages 1 and 2:

FIG. 1 is a block diagram of [a] an ultrasonic inspection system. [A] An ultrasonic probe 1 (simply, probe) is a sensor section for transmitting and receiving ultrasonics. [A] An ultrasonic transmission/reception circuit 2 (simply, transmission/reception circuit) is a circuit for transmitting and receiving ultrasonics to and from the probe 1. Normally, the transmission/reception circuit 2 excites a piezoelectric vibrator in the probe [2] 1 by a high-

pressure impulse signal for generating (transmitting) ultrasonics and amplifies a minute signal received at the piezoelectric vibrator to a predetermined voltage signal level by an amplifier. A waveform processing circuit 3 is a processing section for displaying the inspection result based on a received waveform. For example, the waveform processing circuit 3 takes out a part of the waveform by a gate circuit, extracts the maximum value, and compares the value with a predetermined determination level, thereby determining the inspection result. It also displays the extracted maximum values as light and dark values in order at predetermined positions of a display section 4, thereby forming [a] an ultrasonic image. A control section 5 controls the transmission/reception circuit 2 and the waveform processing circuit 3. In recent years, a personal computer (PC) has often been used as the control section 5.

Page 2, first full paragraph:

[A] An ultrasonic inspection system of the installation type comprises a transporter for moving the system, a scanner for changing the position of a probe or a sample, and the like in addition to the above-described members. Although one probe is used in the description, two probes are used in an inspection method with separate probes for transmission and reception (2-probe method). For a large specimen used on a steel line, etc., the number of probes may range from several tens to several hundreds.

Page 3, second full paragraph:

In the related art described above, the waveform processing circuit 3 uses various signal processing software programs in response to specimens to analyze and determine ultrasonic reception signals. However, for large specimens used in fields of steel, etc., the number of

probes may extend to several hundreds, in which case software for analyzing and determining ultrasonic reception signals and storing continuous data becomes enormous. Further, high-speed and large-capacity computer hardware of a CPU, memory, storage media, etc., becomes necessary to analyze and determine ultrasonic reception signals and store continuous data, largely pushing up the whole system costs. For example, even a comparatively small ultrasonic inspection system of the handy type, etc., comprises ultrasonic reception signal analysis and determination means, thus can collect inspection data, but if an attempt is made to continuously store and manage data of the inspection results, etc., with the ultrasonic inspection system, a problem similar to that described above arises.

Page 3, paragraph bridging pages 3 and 4:

If trouble occurs in [a] an ultrasonic inspection system, it must be repaired by an expert maintenance person. Upon reception of a notification of trouble occurrence, it is desired that an expert maintenance person asks the customer about the symptom of the trouble by telephone and narrows the trouble down to a few points. However, it is often impossible for the maintenance person to locate the failure portion of the system in such a hearing. Therefore, usually the maintenance person first goes to the installation place of the system, checks for the trouble symptom, once returns to the maintenance station, gets a complete set of replacement parts responsive to the symptom, again goes to the installation place of the system, and repairs the system. Thus, it takes much time and a large cost required for the maintenance person to repair the system.

Page 7, first full paragraph:

The invention is characterized by the fact that in a ultrasonic inspection system comprising a probe and a system main body comprising a ultrasonic transmission/reception circuit for exciting the probe and receiving a signal therefrom, a waveform processing circuit for processing a signal from the ultrasonic transmission/reception circuit, and a control section for controlling the operation of the ultrasonic transmission/reception circuit and the waveform processing circuit, [a] an ultrasonic inspection system diagnosis method comprises the steps of connecting the probe to the ultrasonic transmission/reception circuit, making the probe opposed to a test object, exciting the probe for outputting ultrasonics, collecting at least [either] one of data output from the ultrasonic transmission/reception circuit and data output from the waveform processing circuit based on a reflected wave signal of the ultrasonics, disconnecting the probe from the ultrasonic transmission/reception circuit, collecting at least [either] one of data output from the ultrasonic transmission/reception circuit and data output from the waveform processing circuit when a test signal is fed into the ultrasonic transmission/reception circuit, and diagnosing the ultrasonic inspection system based on the collected data.

Page 8, paragraph bridging pages 8 and 9:

The invention is characterized by the fact that in [a] an ultrasonic inspection system comprising a probe and a system main body comprising [a] an ultrasonic transmission/reception circuit for exciting the probe and receiving a signal therefrom, a waveform processing circuit for processing a signal from the ultrasonic transmission/reception circuit, and a control section for controlling the operation of the ultrasonic transmission/reception circuit and the waveform processing circuit, [a] an ultrasonic inspection system diagnosis system comprises positioning

means for making the probe opposed to a test object with the probe connected to the ultrasonic transmission/reception circuit, probe excitation means for exciting the probe with the probe opposed to the test object, first data collection means for collecting at least [either] one of data output from the ultrasonic transmission/reception circuit and data output from the waveform processing circuit when the probe is excited by the probe excitation means, test signal output means for feeding a test signal into the ultrasonic transmission/reception circuit with the probe disconnected from the ultrasonic transmission/reception circuit, second data collection means for collecting at least either of data output from the ultrasonic transmission/reception circuit and data output from the waveform processing circuit when a test signal is output by the test signal output means, and determination means for determining whether or not an abnormality is contained in the ultrasonic inspection system based on the output data collected by the first data collection means and the second data collection means.

Page 9, third full paragraph bridging pages 9 and 10:

According to the invention, there is provided [a] an ultrasonic inspection system having [a] an ultrasonic probe data management function for transmitting and receiving ultrasonics with one selected from ultrasonic probes and inspecting a specimen based on a received ultrasonic signal, the system comprising a computer connected to one or more ultrasonic inspection systems by a transmission line, probe data collection means for collecting characteristic data of the ultrasonic probes contained in the computer, and a storage section for storing the characteristic data collected by the probe data collection means.

Page 12, first full paragraph:

FIG. 3 is a block diagram to show the configuration of the system main body 100 shown in FIG. 2. Parts identical with or equivalent to those previously described with reference to FIG. 1 are denoted by the same reference numerals in FIG. 3 and will not be discussed again. Numeral 6 is an interface existing between a control section 5 and the network bus NB and numeral 7 is a switch device provided between the probe 1 and [a] an ultrasonic transmission/reception circuit 2.

Page 16, first full paragraph:

Formerly, when trouble occurred in [a] an ultrasonic inspection system, a maintenance person went to the installation place of the ultrasonic inspection system and diagnosed the trouble, as described above. However, in the embodiment, the host computer C diagnoses ultrasonic inspection system problems. For this purpose, the host computer C is provided with a self-diagnosis program. The self-diagnosis operation of the host computer C will be discussed with flowcharts shown in FIG. 4 and FIG. 5.

IN THE CLAIMS:

The claims are amended as follows:

1. (Amended) [A] An ultrasonic inspection system management system comprising [one or more] multiple ultrasonic inspection systems each consisting of a probe and a system main body, a host computer, a transmission line for connecting said one or more ultrasonic inspection systems and said host computer, and a data storage section, characterized in

that said host computer comprises data collection means for collecting data provided by said one or more ultrasonic inspection systems via said transmission line and storing the data in said data storage section.

14. (Amended) The ultrasonic inspection system management system as claimed in claim 1 wherein said data collection means comprises probe data reception means for receiving data of said probe of a specific one of said ultrasonic inspection systems.

16. (Amended) In a ultrasonic inspection system comprising a probe and a system main body comprising a ultrasonic transmission/reception circuit for exciting said probe and receiving a signal therefrom, a waveform processing circuit for processing a signal from said ultrasonic transmission/reception circuit, and a control section for controlling operation of said ultrasonic transmission/reception circuit and said waveform processing circuit, a ultrasonic inspection system diagnosis method comprising the steps of connecting said probe to said ultrasonic transmission/reception circuit, making said probe opposed to a test object, exciting said probe for outputting ultrasonics, collecting at least [either] one of data output from said ultrasonic transmission/reception circuit and data output from said waveform processing circuit based on a reflected wave signal of the ultrasonics, disconnecting said probe from said ultrasonic transmission/reception circuit, collecting at least [either] one of data output from said ultrasonic transmission/reception circuit and data output from said waveform processing circuit when a test signal is fed into said ultrasonic transmission/reception circuit, and diagnosing said ultrasonic inspection system based on the collected data.

17. (Amended) In [a] an ultrasonic inspection system comprising a probe and a system main body comprising [a] an ultrasonic transmission/reception circuit for exciting said probe and receiving a signal therefrom, a waveform processing circuit for processing a signal from said ultrasonic transmission/reception circuit, and a control section for controlling operation of said ultrasonic transmission/reception circuit and said waveform processing circuit, [a] an ultrasonic inspection system diagnosis system comprising positioning means for making said probe opposed to a test object with said probe connected to said ultrasonic transmission/reception circuit, probe excitation means for exciting said probe with said probe opposed to the test object, first data collection means for collecting at least [either] one of data output from said ultrasonic transmission/reception circuit and data output from said waveform processing circuit when said probe is excited by said probe excitation means, test signal output means for feeding a test signal into said ultrasonic transmission/reception circuit with said probe disconnected from said ultrasonic transmission/reception circuit, second data collection means for collecting at least [either] one of data output from said ultrasonic transmission/reception circuit and data output from said waveform processing circuit when a test signal is output by said test signal output means, and determination means for determining whether or not an abnormality is contained in said ultrasonic inspection system based on the output data collected by said first data collection means and said second data collection means.

24. (Amended) The ultrasonic inspection system having [a] an ultrasonic probe data management function as claimed in claim 21 [or 23] comprising a storage section for storing data stored on said external storage medium.

25. (Amended) The ultrasonic inspection system having [a] an ultrasonic probe data management function as claimed in [any of claims] claim 21 [to 24] comprising a display section for displaying the data stored on said external storage medium or said storage section.

29. (Amended) The ultrasonic inspection system having [a] an ultrasonic probe data management function as claimed in [any of claims] claim 26 [to claim 28] comprising a storage section for storing the data stored in said storage device.

30. (Amended) The ultrasonic inspection system having [a] an ultrasonic probe data management function as claimed in [any of claims] claim 26 [to 29] comprising a display section for displaying the data stored in said storage device.

Claims 34-45 are added as new claims.